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UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

ADVANCED ANALYTICS, INC.,	
	No. 04 Civ. 3531 (LTS) (HBP)
Plaintiff and Counterclaim Defendant,	
	HIGHLY CONFIDENTIAL
v.	
CITIGROUP GLOBAL MARKETS, INC., f/k/a SALOMON SMITH BARNEY, INC., and THE YIELD BOOK INC., f/k/a SALOMON ANALYTICS, INC.,	**PLAINTIFF ADVANCED ANALYTICS, INC.'S CORRECTED MEMORANDUM OF LAW IN OPPOSITION TO DEFENDANTS' MOTION FOR SUMMARY JUDGMENT**
Defendants and Counterclaim-Plaintiffs	

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PRELIMINARY STATEMENT

Defendants move for summary judgment, claiming there is no competent evidence to support Plaintiff's claims that Defendants stole Plaintiff's ACE sequences. (Sequences are sets of numbers used in connection with a Monte Carlo simulation to value Mortgage Backed Securities ("MBS").) Plaintiff further claims that Defendants used Plaintiff's ACE sequences to make profits both in trading MBS and in licensing software for valuing MBS.

In opposition to the motion, Plaintiff proffers, *inter alia*, the Declaration of its expert, Professor Jianqing Fan, Frederick L. Moore '18 Professor of Finance and Professor of Statistics, Princeton University. Dr. Fan's primary departments are Operations Research and Financial Engineering and associated departments are Economics, Bendheim Center for Finance, and Applied Mathematics. Dr. Fan is the winner of numerous honors and awards, including the 2000 Presidents Award, Committee of Presidents of Statistical Societies, awarded annually to an outstanding statistician under age 40. The Presidents Award is regarded as one of the most prestigious awards in the profession. Dr. Fan has extensive experience in Monte Carlo simulation and has never served as an expert witness before.

Dr. Fan found a veritable "mountain of evidence" that, after their last test of ACE, Defendants stole the ACE sequences, and used them to create derivative sequences. Defendants' obvious goal was to increase profits by trading MBS and also by licensing software to customers of The Yield Book.

Dr. Fan bases his opinion on a strong evidentiary record. The researcher who allegedly selected "Defendants'" sequences, Dr. Teytel, was unqualified and utterly inexperienced in the field. Dr. Teytel allegedly selected these sequences suspiciously soon after the last test of ACE. Dr. Teytel admits that he compared the MBS prices generated by one of "his" sequences against

the MBS prices generated by ACE. His development Notebook is replete with references to ACE. (This is despite the fact that the Mutual Nondisclosure Agreement (the "NDA") strictly forbade any access whatsoever on Dr. Teytel's part to ACE or the ACE trade secrets.) And, as Dr. Fan painstakingly demonstrates, the documentary and statistical evidence shows that sequences that Dr. Teytel claims to have selected were almost certainly ginned up by tracking or approximating ACE.

Dr. Fan's opinions and findings were well known to Defendants prior to this motion, because Dr. Fan had submitted an expert report and had been deposed by Defendants. Nevertheless, in opposition, Defendants have submitted, *inter alia*, the Declaration of Dr. Nathaniel Polish, a professional expert who receives 75% of his income from serving as an expert.[1] Dr. Polish admitted to having no training or experience in selecting or designing sequences or in the statistical theory underpinning the selection of sequences for valuing MBS. He also admitted to having no understanding of the characteristics of an effective sequence other than what he learned from Dr. Fan's deposition. Dr. Polish is plainly unqualified to render any opinion concerning Monte Carlo simulation sequences. Undaunted by his lack of qualifications, Dr. Polish zealously attacked Dr. Fan's conclusions with blatant factual misstatements and brazen misinterpretation of the mathematical principles underlying Dr. Fan's opinion.

In a case involving theft of sequences used in Monte Carlo analysis, if Defendants' position had any merit, one would expect Defendants to have scrounged up an expert with some modicum of pertinent mathematical training or experience with sequences to support their

[1] Nathaniel Polish Deposition 270:23-271:4: Q. What percentage of your business is attributable to acting as an expert? A. Well, by revenue, it's probably 75 percent...." Attached to the Declaration of Todd S. Collins in Opposition to Defendants' Motion for Summary Judgment, dated April 24, 2008 (the "Collins Decl.") as Exhibit X.

position. However, they have failed to proffer the opinion of an expert in stochastic calculus, the mathematical field that provides the foundation for the design and use of sequences.

Moreover, Defendants have not even proffered a cogent mathematical explanation behind the so-called Algorithm that their researcher, Dr. Teytel, allegedly followed to select sequences soon after Defendants' last test of ACE. If Dr. Teytel's Algorithm could not possibly work, as Dr. Fan has opined, that provides compelling support for the proposition that "Defendants'" sequences selected by Teytel are, in fact, knock-offs of ACE and that Defendants stole and used the ACE sequences.

Further, Defendants have produced no independently verifiable evidence to demonstrate that "their" Teytel 100 and 200 path sequences are both real and independently selected (as opposed to phony sequences being used to cover their tracks or sequences derived from sequences stolen from Plaintiff) or that their other two 1000 path sequences are real sequences used as opposed to mere decoys to cover their use of the stolen ACE sequences. Specifically, Defendants have refused to produce computer code used to select "their" sequences and the test system of programs – inputs and outputs – used to test them to allow Plaintiff's expert to reproduce their results and verify their claims. If Defendants' claims of independent development were truthful, one would have expected them to be only too glad to rush forward to produce the pertinent code to support their claims rather than resist such production. Instead, Defendants rely on the bare testimony of their easily impeachable witnesses and their so-called RCS code which they use to generate their sequences from pre-selected seeds (numbers) – not the code they used to select the seeds or test the effectiveness of sequences they generate. (And, of course, the completeness and accuracy of that code is not subject to independent verification.)

The fact that Defendants have proffered no independently verifiable code and testing system for their alleged sequences, and no opinion from a qualified expert to counter Plaintiff's eminently qualified expert, demonstrates that Dr. Fan is correct. At a minimum there is an issue of fact for the jury. On the basis of such compelling evidence, the jury could easily find that Defendants have indeed stolen ACE and used it to select derivative sequences to enhance both Defendants' trading profits and Yield Book licensing revenues.

Material factual disputes preclude entry of summary judgment for Defendants.

FACTS

SUMMARY OF DR. FAN'S CONCLUSIONS

Dr. Fan, an eminently qualified expert in the field of Monte Carlo simulation (Declaration of Jianqing Fan, dated April 24, 2008, submitted herewith ("2nd Fan Decl.") paras. 2-7), who has never testified as an expert before, concluded that there is a mountain of evidence that Defendants stole the ACE sequences and were intent on creating derivative sequences by targeting them. After review of the evidence, Dr. Fan found that:

- Defendants tested ACE extensively. They tested their 200 path single seed sequence, which Defendants were then using for production purposes, against ACE 64 and saw that their sequence, more than three times slower, was much less accurate than ACE 64.

- After Defendants completed testing ACE, they almost immediately thereafter hired Mikhail Teytel and told him to reduce the number of paths "fast". Dr. Teytel had no appropriate mathematical training or experience to tackle this incredibly difficult mathematical problem that no one up to that point had solved other than Dr. Wang, the principal and founder of Plaintiff.

- Dr. Teytel switched from the single-seed method, which Defendants had used previously to select the 200 path production sequence, to a multiple or mixed-seed sequence selection method. The mixed-seed method makes no sense unless one's goal is to target a known sequence like ACE. It takes longer to select sequences by the mixed-seed method as opposed to the single-seed in the manner Teytel claims to have implemented it. The mixed-seed method provides no more likelihood of independently selecting an accurate sequence. But most importantly, because Dr. Teytel was selecting his sequences by testing arbitrary seeds with a pseudo random number generator, he had an effectively

zero likelihood of finding a materially better sequence than any other sequence selected by Defendants' pseudo random number generator, including Defendants' prior 200 path single seed sequence. The only way Dr. Teytel could have found a sequence that was both shorter than Defendants' prior 200 path sequence, and at least as accurate, would have been by targeting ACE. Targeting is easy to do and easy to disguise.

- Dr. Teytel used the public domain, arbitrary seed selection method of selecting his sequences. This method has zero chance of selecting a sequence that is as good as ACE 64, as demonstrated by Defendants' tests during 1997-1998.

- In fact, Dr. Teytel could not have selected "his" 64 path sequence in the time allotted under the seed selection and testing method he claims to have followed.

- Dr. Teytel's Notebook references ACE in such a way that he clearly had the ACE sequences and was testing "his" 100 path sequence against ACE 64.

- The testing allegedly performed by Dr. Polish, Defendants' expert, as described at his deposition, to detect targeting of ACE, was too rudimentary and not powerful enough to detect the many ways that Defendants could have disguised their targeting of ACE. Accordingly, any conclusion by Dr. Polish that targeting did not occur could (and should) easily be disregarded by the jury. (This assumes, of course, that the 100 path mixed-seed sequence Defendants provided through the discovery process is, in fact, the one that Defendants used in production.)[2]

- Dr. Teytel's purported Algorithm makes no mathematical sense, and, perhaps because of this, Defendants have refused to produce their sequence selection code and sequence test system. According to Dr. Fan, Dr. Teytel could not have selected or created sequences using this purported Algorithm.

- The forensic correlation analysis performed by Dr. Fan on information in Dr. Teytel's sequence development Notebook is evidence that demonstrates that Defendants targeted ACE 64.

- There is very strong evidence that the 1000 path sequence was phony and was not intended to be used by Defendants traders to price MBS. It was selected in too careless a manner under the circumstances. Among other things, Defendants simply used the same seed for this alleged 1000 path sequence that they had used for old 200 path production sequence replaced in 1999, and ignored many simple steps that could have been taken to improve upon the sequence.

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[2] In his Fourth Declaration, attached to Defendants' summary judgment papers, Dr. Polish claims to have run a test using Defendants' 100 path mixed seed sequence in CGM 07073, but this was not the same 100 path mixed seed sequence produced by Defendants in this action at CGM 04945, 1999-11-01 in the file called rand_num_100_199991101_86int. Thus, it appears that Defendants have made an incomplete production of their sequences. *See* Collins Decl., Ex. Y (CGM 07073); Collins Decl., Ex. Z (CGM 04945).

Based on Dr. Fan's findings, a jury could easily conclude that Defendants stole ACE, created derivative sequences using ACE, and created the phony 1000 path sequence about the time the 100 path mixed-seed sequence was allegedly made available to customers.

These facts logically suggest that Defendants provided their own traders with the actual ACE sequences, whether disguised as the 100 path sequence or the 200 path sequence allegedly selected by Teytel with the phony Algorithm. (Defendants could easily have approximated, for use by their traders, a 100 path sequence by, for example, simply adding together the paths contained in ACE 32 and ACE 64, which would have provided a 96 path sequence.) Defendants could also have provided to their traders a "super" ACE 896 path sequence – comprised of ACE 32, ACE 64 and ACE 128, with the paths multiplied by four through the well known antithetic method. (This antithetic method was one that Defendants used in the selection of sequences prior to this time, including the 200 path single seed sequence and mixed seed sequences.) This "super" ACE 896 could have been disguised as the 1000 path sequence that Defendants claim to have put into production in 1999.

Assuming, as a reasonable jury could find, that Defendants misappropriated ACE, Defendants would have had no reason to create derivative ACE sequences for use by Defendants' own traders. (That is, it would have been more profitable, following the theft of ACE, simply to provide to the traders sequences containing some combination of the paths contained in ACE 32, ACE 64 and ACE 128.) But an alternate, even inferior, ACE-derived, 100 path sequence would appear attractive to Defendants' 300 institutional customers, because of increased speed (twice as fast as the prior 200 path single seed sequence). Targeting ACE would provide Defendants with a shortcut to select a 100 path sequence at least as accurate as, and two times faster than, their prior 200 path sequence. This approach would of course permit

Defendants – possessing the superior ACE sequences they refrained from sharing with customers -- to make arbitrage profits in connection with their market making activities when trading with the more than 300 Yield Book institutional customers.

Whatever the Defendant actually did with ACE, the evidence is overwhelming that Defendants stole ACE, and then proceeded to create derivative sequences using it. They then attempted to cover up their theft with the phony algorithm and apparently with the phony 1000 path sequence. The ACE sequences are extraordinarily valuable for accurately pricing MBS. 2nd Fan Decl. paras. 119-123.

ARGUMENT

In order for a motion for summary judgment to be granted, the moving party bears the burden of establishing that "there is no genuine issue as to any material fact and that the movant is entitled to judgment as a matter of law." Fed. R. Civ. P. 56 (c); *see Eastman Kodak Co. v. Image Technical Servs. Inc.*, 504 U.S. 451 (1992); *Oxley v. City of New York*, 923 F.2d 22, 24 (2d Cir. 1991); *Ades v. Deloitte & Touche*, 1993 U.S. Dist. LEXIS 12901, at *58 (S.D.N.Y. Sept. 17, 1993) ("[S]ummary judgment remains appropriate only when there is ***no uncertainty*** as the true state of any material fact.") (emphasis added). Further, "[a]ll factual inferences are to be drawn in favor of the party against whom summary judgment is sought." *Oxley*, 923 F.2d at 24; *Matsushita Elec. Indus. Co. v. Zenith Radio Corp.*, 475 U.S. 574, 587 (1986) (any "inferences to be drawn from the underlying facts . . . must be viewed in the light most favorable to the party opposing the motion.") (citation omitted).

POINT I: A REASONABLE JURY COULD FIND THAT DEFENDANTS MISAPPROPRIATED PLAINTIFF'S TRADE SECRETS

A. and B. The ACE Sequences are Clearly Trade Secrets and There is Ample Evidence for the Jury to Find that Defendants Misappropriated ACE and Selected Derivative Sequences Using ACE

The Need for Accurate Monte Carlo Simulation to Value MBS

An MBS is a debt security that is backed by a pool of loans that are secured by mortgages. MBS are thinly traded, unlike, say, IBM stock. Therefore, a trader cannot determine the price based on knowledge of market bids or completed transactions. Institutional investors value MBS based on their expected cash flow, which consists of all the principal and interest the security will be expected to generate during the expected life of the security ("Cashflow"), discounted to the present value. The expected Cashflow is projected based on the current market interest rates and the expected changes in those rates during the life of the MBS, often referred to as "volatility," as reflected by securities that are essentially bets on the amount of future volatility. Defendants used "interest rate caps" to determine volatility in their Yield Book. 2nd Fan Decl. 8-9.

Calculating an MBS's Cashflow is trickier than with a standard debt security because of the possibility of prepayment. With a standard Treasury debt security, the government has no prepayment options. Interest is paid for the life of the instrument and the principal is paid back at the end. The total principal and interest is easy to calculate. In contrast, calculating Cashflow of a single mortgage loan of $1 million at 5% interest that matures in 30 years is much more difficult. Unlike a Treasury security, which cannot be prepaid, mortgages can be prepaid and in practice are regularly prepaid for a variety of reasons. In fact, the average life span of a 30 year mortgage is less than 10 years. 2nd Fan Decl. 10-12.

A prepayment model is used to calculate the Cashflow of a pool of mortgages. The prepayment model is tuned to a particular pool of mortgages, based on historical prepayment rates of specific groups of mortgages of the type in the pool, by taking into account refinancing caused by specific interest rates. To make the most accurate Cashflow calculation, theoretically

one would need to calculate the Cashflow generated by the universe of all possible interest rates during the potential life of the mortgages and then average the present value of those Cashflows to get the current market price. Determining the universe of possible interest rate paths from which to select a subset of paths is possible because, in the long run, interest rate movement is not entirely random; it tends to return to historical averages. This behavior subjects interest rate movement to probabilistic laws and permits the market to price all kinds of interest rate sensitive securities like MBS, as do Defendants, via building stochastic models for describing the likelihood of interest rate movements. 2nd Fan Decl. 13.

Defendants use the well-known two-factor model to describe the uncertainty of interest rate movements. To generate possible future interest rate paths reflecting the probability of these movements, the critical components of inputs are the sequence of numbers that represent the uncertainty of the future. There are gazillions of possible sequences, which can result in gazillions of possible future interest rate paths. To select and generate their sequences, Defendants use arbitrarily selected numbers or "seeds" fed into a standard pseudo random number generator. Plaintiff, by contrast, used mathematical theory to calculate its ACE sequences.

Pricing an MBS by calculating the Cashflow under the universe of all possible interest rate paths is called "Monte Carlo" analysis. As a practical matter, one cannot do a full Monte Carlo calculation because there are gazillion possible interest rate paths that can be generated using current market interest rates and volatility information. So The Yield Book, and all other similar models, uses a subset of all possible future interest rate paths implied by current market interest rates and volatility to generate the Cashflow and then averages Cashflow generated by this subset to price the MBS. Obviously, for the price to be accurate, the subset of all possible

interest rates used must be as representative a sample as possible, so that the average of subsets' Cashflows will be the same average that would result from averaging the theoretical universe of all possible Cashflows. Using a subset of all possible Cashflows to calculate present value is called Monte Carlo Simulation. 2nd Fan Decl. 14-15.

MBS mortgage pools can have face amounts of principal of hundreds of millions of dollars or even more than a billion dollars. Investors can invest $100 million in MBS comprising multiple pools. A Cashflow calculation error of even a fraction of a percent over the expected life of the MBS before it is effectively fully paid off would result in a large Cashflow calculation error. 2nd Fan Decl. 16.

Prepayment model methods are in the public domain. Defendants' Yield Book contains a prepayment model, and Defendants published a description of their methods. Defendants' prepayment model has a very low prepayment error for Pass-Throughs, Interest Only Strips ("IOs") and Principal Only Strips ("POs") – plus or minus only 1 basis point or .01%. 2nd Fan Decl. 17. (As discussed below, this is a miniscule error rate compared to the error rate Defendants found was caused by their 200 path single seed sequence when they compared it to the 64 path ACE sequence that they had extensively tested.)

Therefore, the key to accurate generation of Cashflow, and therefore valuing MBS, is using as representative a sample of the future interest rate paths as possible to generate Cashflow. If the set of interest rate paths used to generate Cashflow is not perfectly representative of the universe of possible interest rate paths under current market conditions, it can be said to be internally inconsistent and lead to inaccurate present value calculations. Inaccurate valuation could provide arbitrage dangers – or arbitrage opportunities if a trader has the use of a valuation model that is superior to that used by other traders. 2nd Fan Decl. 18-21.

Arbitrage is the simultaneous purchase and sale of a security at different prices so that the person obtaining the benefit of arbitrage makes a profit with no risk. No investor wants to be a victim of arbitrage, but all investors would like to take advantage of an arbitrage situation if they can find it in the market. As shown above, the illiquidity of the MBS market forces the buyers and sellers to rely on pricing models to determine the fair current market price for a given MBS. If a trader's model is superior to that of other traders in the market, arbitrage opportunities present themselves. Risks arise if the model is inferior. 2nd Fan Decl. 22.

Use of Defendants' Sequences in Monte Carlo Simulation

Sequences are like coefficients. They are used to modify the market volatility information, and the results are added to the Treasury Yield Curve to create a set of interest rate paths that are supposed to be perfectly representative of the universe of interest rate paths given current market conditions. However the sequence is selected or generated or created, all sequences have the same function – to generate as representative a sample of interest rate paths as possible. The fewer the interest paths, the faster the analysis but, all other things being equal, the fewer the paths, the less accurate the sequence. 2nd Fan Decl. 23.

Defendants claim to have used five sequences in The Yield Book – a 200 path single seed sequence, a 100 path and a 200 path so-called mixed seed sequences, and two 1000 path sequences. Defendants allegedly gave its institutional clients access to the 100 path mixed-seed sequence, which was twice as fast as the prior 200 path single seed sequence, for more than a year – October 1999-April 2001. This would have made the Yield Book more attractive to their more than 300 institutional clients. 2nd Fan Decl. 24-25.

Defendants then allegedly developed a 200 path mixed-seed sequence that was made available to Defendants' traders in October 2000 and to institutional clients in February 2001. By

then, computer speed would have more than doubled so the institutional clients would likely not have felt handicapped by the calculation slowdown caused by the doubling of the number of paths. After the implementation of the 200 path mixed seed sequence, the Yield Book external customer revenues continued to climb from 2002-2006. 2nd Fan Decl. 25.

Each path of Defendants' sequences covers the 360 months of payments for a 30 year mortgage, using a total of only 86 time steps. The interest rate at any of the 360 periods can be determined by interpolation of the interest rate information generated by the 86 time steps. 2nd Fan Decl. 26. When Defendants are valuing an MBS that is backed by mortgages of less than 30 years' duration, such as 15 year mortgages, they simply use fewer than 86 time steps for each path. When Defendants want to project interest rates further than 30 years, they can use more time steps for each path. Defendants appear to use up to 116 time steps in their sequences in some cases. But no matter how many time steps Defendants' paths use, if the sequence is properly formed, when the same seed or seeds are used to generate a sequence, the actual numbers in each of the two factors (numbers) of each time step of each path are always the same. Defendants in the past have claimed that these are different sequences but, in reality, they just use different portions of the same sequence when the seeds are the same. It is merely a matter of semantics. 2nd Fan Decl. 26-28.

The ACE sequences were provided to Defendants as final sets of numbers. They were not generated each time. During Defendants' 1997-1998 testing of the 32, 64 and 128 path ACE sequences, the ACE sequences were substituted for Defendants' own sequences. Defendants' sequences are regenerated from the same seeds fed into a pseudo random number generator each time a security is priced. 2nd Fan Decl. 31

Defendants refer to the ACE sequences as "ACE Numbers." That term does not really reflect the incredible mathematical feat involved in calculating a Low Discrepancy Sequence, a sequence derived from mathematical calculations, that is more accurate than sequences generated using well known public domain pseudo random number generators. Defendants used a pseudo random number generator to generate their sequences before testing ACE (and also allegedly after testing ACE, when Dr. Teytel purportedly selected 100 and 200 path mixed-seed sequences). The ACE 64 path sequence was found to be significantly more accurate at valuation of MBS than Defendants' 200 path production sequence, which had been selected using the public domain pseudo random number generator method. With less than one third of the number of paths, ACE 64 was also more than three times faster. 2nd Fan Decl. 32. Defendants tested all of Plaintiff's ACE sequences and offered Plaintiff a six figure fee to license them, though that was much lower than Plaintiff believed was appropriate. 2nd Fan Decl. 33.

Defendants' Mixed-Seed Sequence Developer was Unqualified

After seeing the performance of ACE, Defendants decided to develop a faster sequence with fewer paths. The obvious choice of developers would have been someone with relevant mathematical training and Monte Carlo experience like Dr. Y.K. Chan. Dr. Chan worked for Lakhbir Hayre, Defendants' head of Mortgage Research. But Chan was not involved. 2nd Fan Decl. 36. Instead, Defendants hired Mikhail Teytel. Defendants told Dr. Teytel to work "fast" to reduce the number of paths from the 200 used with the then production sequence.

Dr. Teytel was an extremely unlikely choice of researcher to reduce the number of paths – whether he was to do so "fast" or even slow. At the time Defendants gave Dr. Teytel the assignment, he had no relevant experience whatsoever (2nd Fan Decl. 37), and this is an extraordinarily difficult mathematical problem. 2nd Fan Decl. 40. With no experience, Dr.

Teytel needed supervision. Instead of using the mathematically trained and experienced Dr. Chan to supervise Dr. Teytel, Defendants gave the assignment to Robert Russell, a person with no understanding of stochastic calculus, the math behind sequences. This made no sense if Defendants were intending to do any serious development research. 2nd Fan Decl. 38. Both Dr. Teytel and Russell reported to the Head of Mortgage Research, just as Dr. Chan did.

Despite what appears to be an insurmountable deficiency in his training and experience to complete the assignment of reducing the number of paths "fast", Dr. Teytel went on to quickly select 64 path, 100 path and 200 path mixed-seed sequences. He claims that the 64 path sequence was abandoned because it was not as accurate as the production 200 single seed sequence that Dr. Chan had long before selected. But the latter two sequences, 100 and 200 path, were presumably just as good as the old single seed 200 path sequence. 2nd Fan Decl. 39.

Teytel's Mixed-Seed Algorithm Does Not Make Sense Except to Target ACE

As one would expect from someone like Dr. Teytel with no training or experience to solve this extraordinarily difficult mathematical problem, the procedure he claims to have devised to solve the problem makes no mathematical sense. His so-called "Mixed Seed Algorithm" is no more than a half-baked proposal or a sketch of the idea. There is no appropriate coordination among the seeds he selected. His approach is like drawing ten different pieces of a picture independently, without looking at what the other pieces are or what their scales are, and then putting the different pieces together to form a picture. The chance that such a random drawing can result in a cogent picture is non-existent. 2nd Fan Decl. 56-58.

The only explanation of what Dr. Teytel could have hoped to accomplish with a mixed-seed selection process was that Dr. Teytel was using the mixed-seed method to target ACE. According to Dr. Teytel, in accord with his so-called Algorithm, he tested 390,000 seeds in

developing his 64 path sequence. In contrast to the two hours for each of the 390,000 seeds Dr. Teytel would have had to devote for these alleged tests if he had been selecting a new sequence, it would have taken only seconds to compare the distribution of the sequence generated by each of the seeds to the distribution of ACE 64, or to compare the distribution of the future interest rate paths generated by the seeds with the distribution of the future interest rate paths generated by ACE 64. This was the only type of comparison that was feasible in the time that Dr. Teytel allegedly tested his 390,000 seeds. Dr. Teytel would have had no problem running through all the hundreds of thousands of seeds listed in the Notebook, provided his purpose was simply to approximate ACE. 2nd Fan Decl. 59.

Dr. Fan's own correlation analysis provides stark evidence that Dr. Teytel was using the mixed seed method to target ACE. The correlation analysis on the sequence generated by Dr. Teytel's "best" seed, 13812, for the first time band of eight time steps covered by the first seed, shows unusual correlation between that sequence and the ACE 64 sequence, both vertically (along time steps) or horizontally (across 64 paths) or both. 2nd Fan Decl. 60.

Teytel's Development Notebook is Filled with Evidence that He Targeted ACE

The Teytel Notebook has numerous references to "ACE" in a context that indicates that Dr. Teytel had access to and possession of the ACE 64 path sequence and was using it to develop another sequence. Most glaringly, the Teytel Notebook states "ACE 64 comparison for LDS 100." Dr. Teytel denies that he had the ACE sequence, claiming that all he had were the prices calculated when Defendants tested the ACE sequences. However, that is neither what this quoted language suggests on its face nor what the rest of the Notebook suggests. There is no comparison anywhere in the Teytel Notebook of the ACE calculated prices against the prices derived from

Teytel's alleged 100 path mixed seed sequence. The word "prices" is not used in connection with ACE anywhere in the Notebook. 2nd Fan Decl. 41.

There is additional Notebook evidence that Dr. Teytel had actual possession of the ACE sequence. When Dr. Teytel was testing "his" mixed seed sequences, he referred to the program which included the mixed-seed sequence being used to price the test portfolio of CMO securities as "cmoopt". Dr. Teytel referred to "cmoopt.simple", which he admitted referred to the program for pricing securities with the then current 200 path single seed sequence (which Dr. Teytel was trying to improve upon by developing a shorter sequence "fast"). Tellingly, on the third line of that very same page, Dr. Teytel refers to "cmoopt.ace" which, following his own prior convention in the Notebook, logically refers to an executable program using the ACE sequence to price the test portfolio of securities. The following page (CGM 00240) also is consistent with the use of the ACE sequence to price securities. It shows the output pricing of both cmoopt and ACE. The ACE output files are listed under the heading "Project ACE". 2nd Fan Decl. 42.

Another indication of copying of ACE 64 is Dr. Teytel's reference to the source code -- "gauss_random with fixed long seeding" -- as being one of the programs he used to conduct the "ACE64 comparison for lds 100". Previously, when Robert Russell, Dr. Teytel's supervisor, had been testing the ACE sequences for Defendants, he had used a modified version of the gauss_random.c program. Dr. Teytel's Notebook reference here to "gauss_random" clearly does not refer to the gauss_random.c program used to generate the 200 path single seed sequence, because that sequence was not being tested here. Dr. Teytel's own notation states that the comparison here was for a test between the "ACE64" and Teytel's "lds 100" mixed seed sequence. There was simply no reason to generate the old single seed 200 path sequence for this comparison between ACE64 sequence and the Teytel 100 path mixed seed sequence ("lds 100").

Therefore, the reference to "gauss_random" here must be a reference to the modified version of the gauss_random.c program used by Robert Russell, who both tested ACE and supervised Dr. Teytel, to read in the ACE sequences. 2nd Fan Decl. 43.

Further, as noted above, immediately after the reference to "gauss_random" is the reference to "with fixed long seeding" -- so the entry reads "gauss_random with fixed long seeding". In C code terminology, the computer language that the "gauss_random" program was written in, the default mixed seeds or "seeding" used by defendants to seed their pseudo random number generator to produce LDS100 are all "short integers." In contrast, the default seed in the gauss_random.c program used to generate the old 200 path single seed sequence is a fixed "long integer."

Thus, the "gauss_random" program referred to when Dr. Teytel referenced "gauss_random with fixed long seeding" cannot be any version of gauss_random.c that might have been modified to test this 100 path mixed seed sequence, or Dr. Teytel would have referred to it as "gauss_random with mixed short seeding" rather than "gauss_random with fixed long seeding". This further supports the conclusion that the entry "gauss_random with fixed long seeding" is a reference to the gauss_random.c program modified by Robert Russell to read in the ACE sequences during testing. 2nd Fan Decl. 44-45.

Defendants' 1000 Path Sequence Makes No Sense and Looks like it was Used as a Cover Up for the Use of ACE

On August 1, 1999, Defendants suddenly made a 1000 path sequence available to their traders. This sequence was a single seed sequence that used the same seed as the old 200 path single seed production sequence that had been abandoned in favor of the 100 path mixed-seed sequence. It was selected in an extremely careless manner given that it was going to be used to price hundreds of millions and billions of dollars of MBS. This suggests that it had another

purpose. That purpose appears to have been to cover up the use of the stolen ACE sequences. 2nd Fan Decl. 61-70.

The Polish Fourth Declaration is Filled with Mischaracterizations, Misstatements of Fact and Mathematical Errors

In his Fourth Declaration, dated February 15th, 2008("Polish Decl."), Dr. Polish, Defendants' expert, at the first point in paragraph 6, completely misstated the point Dr. Fan made by his test of the "Best" seed, 13812, from Dr. Teytel's 64 path mixed seed sequence. This, it will be recalled, was the first sequence Teytel worked on after being hired. Dr. Fan found that there was only a 0.5% chance that this seed was selected without targeting ACE 64. Obviously, if Dr. Teytel targeted ACE 64, he had in hand ACE 64 and the other ACE sequences that his supervisor, Robert Russell, had previously tested for Defendants.

Polish's attack is that Dr. Fan did not test ACE 64 against The Yield Book production code used to generate the sequences that Defendants produced, a totally irrelevant argument with respect to this proof that Defendants had stolen and targeted ACE. Moreover, as Dr. Fan explained, the sequences produced were suspect as to authenticity. There is no way to verify that they are the real sequences that Defendants actually used, as computer code can easily be changed or not produced and the code turned over in discovery had the ability to read in other sequences. 2nd Fan Decl. 71-18. The only practical use for mixed-seeds is to approximate a known sequence like ACE. 2nd Fan Decl. 81. And Dr. Fan's selection of 16 and 32 paths was perfectly appropriate, a fact that Dr. Polish did not grasp because he does not have sufficient statistical background to appreciate the import of the evidence. 2nd Fan Decl. 82-83.

The Polish Decl., paragraph 6 (Second Point), mischaracterized Dr. Fan's testimony. Dr. Fan never admitted that his results were wrong. He admitted merely that he mixed up the results with some other outputs. In fact, he did not change the computer code. He took the same input

file and the same code and ran the results again and replaced those results on the second day of his deposition. In addition, Dr. Fan has verified many other aspects of Dr. Hu's work, including counting the number of seeds and computing the number of hours. He also ran the KS test independently. Dr. Hu is a respected expert in the field of mathematics and in Monte Carlo analysis, and it is perfectly appropriate for another expert in the field to rely on Dr. Hu's work for this simple statistical task. 2nd Fan Decl. 85.

The Polish Decl., paragraph 6 (Third Point), also mischaracterized Dr. Fan's testimony. He never testified that the correlation analysis is not useful for determining whether a sequence designed to value MBS is derived from another such sequence. On the contrary, what the testimony meant more precisely was that a sequence derived from another sequence can be useful for valuation of MBS. The degree of usefulness can be determined by empirical testing. The defendants have the testing system to do this and to value the benefit or accuracy of a targeted sequence. They never provided Plaintiff with their test system, including the MBS and interest rate related inputs and outputs, to demonstrate that they performed appropriate testing of any of their sequences. 2nd Fan Decl. 86.

The Polish Decl., paragraph 6 (Fourth Point), again mischaracterized the purpose of Dr. Fan's test. Dr. Fan did not believe the production code was reliable and so used a seed from Dr. Teytel's first sequence, the 64 path sequence, which was never put into production. Dr. Fan believed this was the most reliable method to determine if the seed selected when developing that sequence had been selected by targeting ACE. He found that it had, demonstrating that Defendants had both stolen and targeted ACE. 2nd Fan Decl. 87-88.

Dr. Polish's attached figures are very different from Dr. Fan's, because Dr. Polish did not test the Teytel "Best" seed, 13812, against ACE 64 like Dr. Fan did. Dr. Polish also did not

properly follow the method that Dr. Fan used. Dr. Fan tested using the first 16 numbers in the first 8 time steps, whereas Dr. Polish used only the first 8 numbers in the first 8 time steps. There was no reason Dr. Polish could not replicate Dr. Fan's work. Indeed, Dr. Fan gave Defendants the computer codes related to his computation. Defendants have never complained that they could not run Dr. Fan's code or that it has any errors in the code or the calculations. 2nd Fan Decl. 89. Polish Decl. Paragraph 8 is rehash of his irrelevant complaint that Dr. Fan tested the Teytel 64 path "Best" seed. 2nd Fan Decl. 90.

The Polish Decl., paragraph 9(a), is an attempt to mischaracterize Dr. Fan's testimony in an effort to provide support for the validity of the Algorithm. Dr. Fan never agreed that Dr. Teytel's mixed-seed Algorithm makes any mathematical sense, and he has explained repeatedly, and without contradiction by any qualified expert, why it does not. 2nd Fan Decl. 91.

The Polish Decl., paragraph 9(b), is wrong. Dr. Fan did in fact check a part of Dr. Hu's work on the spatial distribution and indeed went beyond Dr. Hu's work to compute the probability of spatial matches as close as those between an ACE sequence and the sequence generated by the "Best" seed 13812 in Teytel's Notebook. As explained above, the final computation results showed that if the seed "13812" were selected independently, without benefit of targeting the ACE sequence, the chance that such a good match would result was only 5 in 1000 or 0.5%. This is ten times smaller than the usual statistical test of 5% percent used as the litmus test for rejecting claims of independent selection. This is very strong statistical evidence that Dr. Teytel targeted ACE in selecting his 64 path mixed-seed sequence and therefore had access to and possession of the ACE sequences. 2nd Fan Decl. 92.

Further, Dr. Fan did not reject any conclusions contained in Dr. Hu's report. In fact, Dr. Fan's independent work on the spatial matches discussed above reinforces Dr. Hu's work. Dr.

Fan merely said that the words "beautiful" and "identical wacky" require a judgment call. This judgment call is consistent with Dr. Fan's statistical test result that showed that there was only a 0.5% probability that Teytel's "Best" seed had been selected independently without targeting ACE 64. 2nd Fan Decl. 93.

The Polish Decl., paragraph 10, contention that Dr. Polish did not have enough information to permit evaluation of ACE's novelty or utility is silly. After extensively testing ACE to their heart's content, Defendants in fact offered a $100,000 license fee in the first year and $50,000 thereafter. This alone is a simple and powerful proof that, to Defendants, ACE had value. If ACE were not novel and useful, they would not have offered any money for it. Moreover, after extensively testing ACE, they tested their own 200 path production sequence against it and found that their own sequence resulted in huge pricing errors, as discussed elsewhere in the 2nd Fan Declaration. 2nd Fan Decl. 94.

Further, the ACE sequence information Dr. Fan reviewed has important mathematical characteristics. One of them is the distribution characteristics of the data (numbers) in the data clouds (the universe of numbers in the sequence). The data is placed on the high-dimensional cube as uniformly as possible. As a result, with a conventional transformation, the distributions of the numbers in any path and across all the paths in any time steps should ideally be close to normal – a Bell curve distribution. Contrary to Dr. Polish's Declaration and Expert Report, these characteristics cannot easily be achieved with so many time steps (86 for 30 years) and so few paths (100 or 200). 2nd Fan Decl. 95

In fact, as Dr. Fan testified at his deposition, according to the random matrix theory, no random number generators, such as the one used by Defendants, can achieve the results he has seen in ACE. This is particularly true when the number of rows and numbers of columns are in

the same order of magnitude. For the 64 paths with 86 dimensions, the number of columns is 64 and the number of rows is 86, which is the same order of magnitude; likewise for 100 or 200 path sequences with 116 (or 86) dimensions, the number of columns is 100 or 200 and the number of rows is 116 (or 86), and they are of the same order of magnitude. This situation is one of the hardest situations in which to generate a random matrix that behaves like a Gaussian (think Bell curve) distribution, according to the random matrix theory. As a result, top statisticians and Monte Carol analysts have failed to find a good algorithm for this. Dr. Teytel could not possibly accomplish this feat by his so-called mixed-seed Algorithm. However, using a low-discrepancy sequence such as ACE as a template, together with mixed seed approximations, he could have done it, and the evidence shows that Dr. Teytel in fact did target ACE 64. 2nd Fan Decl. 96.

The Polish Decl., paragraph 11-16, is wrong. As shown above, Dr. Polish has no training, experience or demonstrated expertise to evaluate the efficacy of a sequence or method for creating or selecting a sequence. He is certainly not a mathematician with any knowledge of the statistical principles underlying creation and selection of sequences or Monte Carlo simulation. He does not even know the mathematical formulas of the Gaussian density that a first year student of statistics would know. He is not qualified to give an opinion in this field of mathematics. 2nd Fan Decl. 97.

The Polish Decl., paragraph 18, claims that he is a computer scientist and an applied mathematician. But he demonstrates his lack of knowledge in statistics when he indicates that he does not understand the well known statistical phrase "tends to be larger than usual." In the field of statistics, this phrase means that something that is at the 95th percentile or even more extreme. In the statistical profession and statistical applications including finance, economics and biomedical sciences, this shorthand phrase is well understood. This is merely additional

evidence that Dr. Polish's does not have sufficient training or experience to qualify as an expert witness in the field of statistics and Monte Carlo simulation. In fact he admitted as much at his deposition. 2nd Fan Decl. 98.

The Polish Decl., paragraph 19, complaints about lack of information are simply wrong. At Dr. Fan's deposition, he said that the seed 13812 comes from Dr. Teytel's Notebook and is identified as the "Best" seed. He also said that with the seed and dram48, you can generate a 64-path sequence. Dr. Polish was also wrong that Dr. Fan did not identify which were the "best" matched paths of the ACE 64 sequence and the 64 path sequence generated by the "Best" seed, "13812", from Dr. Teytel's Notebook. In fact, Dr. Fan did make this identification and did give the matches to Defendants. As he explained, even if he had not given Defendants the best matches, this would be part of intermediate results and is of no scientific interest, as the overall measure of matches is used as the test statistic to see whether the overall matches are beyond the reasonable value of the independent selection. Defendants were given all of the code necessary to duplicate his analysis. No doubt they tested it and found it to be accurate. Otherwise, they would have criticized it. 2nd Fan Decl. 99.

The Polish Decl., paragraph 20-23: Dr. Fan only admitted the degree to which he had mixed up the input files and output files. He did not change the code. The whole computation code was given to Defendants to avoid the ambiguity of methodology and allow them to replicate Dr. Fan's work. Dr. Polish has found no errors in Dr. Fan's work, because there are none. 2nd Fan Decl. 100.

The Polish Decl., paragraph 24-25: The paths shown in the exhibit are correct. The correlation coefficient does not depend on the scale of the numbers, and both paths are rescaled to have the same mean and standard deviations. Dr. Polish has already demonstrated a lack of

training or experience in statistics that would qualify him to give an opinion on the subject. His contentions in these paragraphs only confirm his lack of knowledge in this field. Dr. Polish has the code; it is very simple to understand from the code exactly what has been plotted, to challenge the method that Dr. Fan used, and to contradict the results that are produced; but he has not been able to do so. 2nd Fan Decl. 101.

The Polish Decl., paragraph 26-30, is completely misleading. Reading Dr. Polish's Fourth Declaration, one is given the distinct impression that he tested ACE 64 against the Teytel "Best" seed, 13812, from his efforts to select a 64 path mixed-seed sequence. In fact, Plaintiff recently learned from Defendants' counsel that this is not what Dr. Polish did at all. Instead, he allegedly tested ACE 64 against a different sequence, the Teytel 100 path mixed-seed sequence, which was allegedly used in production. This is an astonishing effort at misdirection from a purported computer scientist. Moreover, as discussed extensively above, it has no bearing on the results of Dr. Fan's tests of the 13812 Teytel "Best" seed, from which Dr. Fan concluded that it had been selected by targeting ACE 64. 2nd Fan Decl. 102.

Furthermore, Dr. Polish made a fatal mistake in his analysis that caused the inconsistency of his results with Dr. Fan. Dr. Polish matched only 8 numbers instead of the 16 numbers that Dr. Fan matched, as he clearly stated in his deposition testimony. Matching 8 numbers is much easier than matching 16 numbers. The error does not appear to be inadvertent, as Dr. Polish indicated that he knew that a longer number (16 digits) would be harder to match than a shorter number (8 digits). Thus, Dr. Polish's conclusions are completely invalid. 2nd Fan Decl. 103-104.

The Polish Decl., paragraph 31, indicates that Dr. Polish misunderstands the purpose of correlation analysis in statistics. He mistakenly understands it as "to compare two sequences that

have been randomly generated to determine if the sequences have a relationship to one another." This is wrong. Correlation is one of the most popular measures in statistics, science and engineering to measure the linear relationship of any two sequences of numbers, not necessarily randomly generated ones. Dr. Polish then argued that the sequences in The Yield Book are not randomly generated. This again is wrong. Dr. Polish has failed to differentiate between random variables and the realizations of the random variables, a basic concept in elementary statistics. Certainly, the seeds selected for The Yield Book sequences were arbitrarily selected in accordance with no methodology other than arbitrarily testing a range of numbers, and the resulting sequences were then allegedly tested in accordance with the purported Algorithm. There is no rhyme or reason behind this method. 2nd Fan Decl. 105.

The Polish Decl., paragraph 32, again demonstrates his ignorance of the fundamental mathematical principles involved. As shown above, according to the random matrix theory, no random number generators can generate a sequence of paths that behave like the normal distribution when the numbers of rows and columns are in the same order of magnitude. Dr. Polish's reasoning is circular and mistaken. He misunderstood the purpose of the correlation analysis. Until he reviewed Dr. Fan's testimony, he did not appear to understand the Gaussian distribution characteristics necessary for an effective sequence. 2nd Fan Decl. 106.

The Polish Decl., paragraphs 33 and 34, just highlights his lack of familiarity with the subject matter. As explained above, the purpose of correlation analysis is to determine whether Dr. Teytel independently selected the seeds without using ACE. The evidence of unusual correlation is exceedingly convincing. Dr. Polish attempted to convolute this key finding but has not presented any mathematical evidence to contradict it. 2nd Fan Decl. 107.

The Polish Decl., paragraphs 35-37, show examples that are well known in statistics as a few exceptions. They cannot occur if, as here, the data are approximately Gaussian. Both ACE sequences and the sequence generated by the seed 13812, identified as the "Best" seed in Dr. Teytel's Notebook, are approximately normally distributed, as demonstrated in Dr. Fan's report. Therefore the exceptions are inapplicable. 2nd Fan Decl. 108.

The Polish Decl., paragraph 38, is a rehash of his earlier invalid points. Dr. Polish does not appear to understand the basic concept of hypothesis testing in statistics. The test statistic that Dr. Fan designed is neither biased nor skewed in any way. Defendants' sequences were selected using arbitrary criteria to select the seeds used with the public-domain pseudo random number generator, which cannot be expected to create a sequence that is any more accurate than random chance. The tests Defendants claim to have run after generating their sequences change nothing, because successfully pricing one benchmark portfolio says nothing about the ability of a sequence generated randomly like this to accurately price another portfolio. The method suffers from selection biases and chance variability. Thus, correlating their sequences against sequences selected arbitrarily is a fair test. 2nd Fan Decl. 109.

The Polish Decl., paragraph 39: This again shows that Dr. Polish does not understand the concept of the test statistics and the well-known concept of hypothesis testing. As Dr. Fan testified at his deposition, 64 paths can be permuted in a random matter, yet the price of MBS remains the same. Therefore, any programmer would permute the paths to hide the trace of copying and targeting. In order to deal with the random permutation, one has to find the first best match, the second best match, the third best match, and so on. One does not need to find all 64 matches, as Dr. Teytel could have been targeting just 16 or 32 paths from an ACE sequence. Matching further obscures the goal of the study. The test statistic is fairly evaluated, as other

random seeds are subject to the same method of scrutiny. The same test standard applied to the seed 13812 as to other 100,000 seeds that were randomly selected. The procedure is absolutely fair and sound. Clearly, Dr. Polish does not understand the concept and made an inappropriate comparison. 2nd Fan Decl. 110.

The Polish Decl., paragraph 40, raises no new points. Both the best 16 matches and the best 32 matches result in sound test statistics. Both of them indicate that the matches between an ACE 64 sequence and the sequence produced by seed 13812, identified as the "Best" seed in Dr. Teytel's Notebook, are much closer than usual, with a probability of 2.4%. The argument of Dr. Polish is completely irrelevant. His reasoning is similar to questioning why one compares only the faces of two persons, which comprises less 25% of the whole body, to determine whether the two persons are from the same race. 2nd Fan Decl. 111. The Polish Decl., paragraph 41, is simply wrong for the reasons shown above. 2nd Fan Decl. 112.

The Polish Decl., paragraph 42, resorts to untrue statements. As shown above, Dr. Polish has the computer code to regenerate Dr. Fan's figures himself. It is not true that Dr. Fan did not know how Dr. Hu generated the sequence from seed 13812. Dr. Hu generated it using the "production code" produced by Defendants, and Dr. Polish, as a computer programmer himself, could have easily verified this himself and disputed it if he had found an error. Instead, he chose to try to confuse the issue and used a completely different sequence that he alleged to be the 100 path production sequence. However, Dr. Fan was unable to verify the source of the data claimed by Dr. Polish. 2nd Fan Decl. 113.

The Polish Decl., paragraph 43, is a repetition of the arguments made before and that have been rebutted. Dr. Fan found evidence of Dr. Teytel targeting ACE 64 in his tests against the Dr. Teytel 64 path "Best" seed. Polish's test of another sequence does not change this

finding that Defendants possessed the ACE sequences and were targeting ACE 64. There was no error by Dr. Fan. It is irrelevant how well the targeting was done to the point that they were actually targeting ACE. 2nd Fan Decl. 114-115.

The Polish Decl., paragraphs 44-47, uses faulty logic, as explained above. Therefore, the results are of no value. In an effort to confuse matters, Dr. Polish has compared ACE 64 to an entirely different sequence than Dr. Fan used rather than verifying Dr. Fan's tests with the code and data Dr. Fan provided to Defendants for that purpose. Dr. Polish's test says nothing about Dr. Fan's test or anything definitive about what Defendants did or did not do. The correlation with "the 100 path sequence actually used in the Yield Book" has no bearing on Dr. Fan's analysis. 2nd Fan Decl. 116.

Furthermore, Dr. Polish made errors in addition to the fatal error spelled out above with respect to using 8 rather than the 16 numbers that Dr. Fan used. The mistake is that in The Yield Book 100 path mixed seed sequence, the numbers in the first factor for the first path and second path are highly dependent. Suppose that 8 numbers of the first factor in the first 8 time steps are (1, 2, 3, 4, 5, 6, 7, 8). Then, the 8 numbers of the second factor in the first 8 time steps are simply: (-1, -2, -3, -4, -5, -6, -7, -8). This kind of pattern continues for the rest 98 paths, due to the antithetic method used in the 100 path sequence. Any statistician would understand that the derivative paths such as (-1, -2, -3, -4, -5, -6, -7, -8) should be eliminated before the correlation analysis. But, Dr. Polish did not do this. 2nd Fan Decl. 117.

In addition, Dr. Polish did not use the data from "Yield Book 100" that Defendants produced in this case. This also casts serious doubt of the fidelity of Dr. Polish's analysis and further doubt about the accuracy and completeness of Defendants' production in this case. 2nd Fan Decl. 118.

In sum, as demonstrated above, there is ample evidence for the jury to find that the ACE sequences are trade secrets that Defendants both stole and used to select derivative sequences for use by their own traders and customers.

C. Plaintiff Timely Filed Suit for Misappropriation

Defendants implicitly admit, as they must, "that New York adheres to the continuing tort theory with respect to the misappropriation of trade secrets." *Kistler Instrumente A.G. v. PCB Piezotronics, Inc.* 419 F. Supp. 120, 122 (W.D.N.Y. 1976) (cited at Defs. Br. at p. 26).

Where a plaintiff enters into a confidentiality agreement with a defendant, pending a license or similar agreement to be entered into in the future, plaintiff is not limited to a breach of contract action. Plaintiff may also seek damages for the continuing violation of his property rights, with new violations giving rise to successive causes of action for infringement. *Id.*, citing *Sachs v. Cluett, Peabody & Co.*, 177 Misc. 695, 699, 31 N.Y.S. 2d 718, 722 (Sup.Ct. 1941), *rev'd on other grounds*, 265 App.Div. 497, 39 N.Y.S.2d 853 (1st Dept. 1943); *General Precision, Inc. v. Ametek, Inc.*, 20 N.Y.2d 898, 285 N.Y.S.2d 340 (1967). According to the *Kistler* court:

> In the instant case, plaintiff asserts that the defendant continues to use the confidential information and technical know-how allegedly misappropriated and that the trade secrets have not been destroyed by publication and remain confidential. *Therefore the misappropriation and use of the confidential information by the defendant within three years prior to the commencement of this suit remains actionable for damages and other appropriate relief.*

Id. at 123 (emphasis added).

Of course, Defendants can hardly claim that their misappropriation with respect to the 200 path mixed seed sequence – in production use as of February 2001, three years before the suit began – can be divorced from or separated from their earlier misappropriation with respect

to their 64 path and 100 path mixed seed sequences. Defendants admitted that all three sequences involved the same researcher – Teytel, the same algorithm, the same development process, the same development notebook, and the same use of mixed seeds. Robert Russell Dep. 449:6 – 451:24 and Notebook (Declaration of Russell D. Munves, dated April 24, 2008, Ex. O and P). Nor can Defendants claim (at least not with a straight face) that Plaintiff's Complaint neglects to seek recovery for each and every act of misappropriation in which Defendants engaged. See Complaint at para. 1, 2, 88-90 (Defendants' use of Plaintiff's software allowed Defendants to reap huge profits "over the last three years").

Defendants' statute of limitations attack, then, comes down to a rehash of Defendants' lame charge that Plaintiff has failed to state a cause of action. That charge Plaintiff has already dispensed with in preceding sections of this Brief.

In addition, Defendants fraudulently concealed their use of the ACE trade secrets by assuring Plaintiff that they would not misappropriate the ACE sequences and the trade secrets therein and that Plaintiff could depend upon the NDA to protect Plaintiff against any possible impermissible use. Wang Decl., para. 45-47, and Defs' Rule 56.1 Statement, No.99. As a result of this fraudulent concealment, Plaintiff did not become aware (and could not have become aware through the exercise of reasonable diligence) of Defendants' use of the ACE trade secrets until shortly before Plaintiff filed its complaint in 2004. Plaintiff became aware of such impermissible use through the investigation and analysis of Plaintiff's attorneys. Accordingly, on principles of fraudulent concealment, the statute did not begin to run until shortly before the filing of the complaint in 2004.[3] *See Butala v. Agashiwala*, 916 F. Supp. 314, 319 (S.D.N.Y.

[3] The theory of fraudulent concealment demonstrates that Plaintiff's misappropriation claim is not time-barred with respect to the period of 1999 to 2001. As has already been addressed, Plaintiff's misappropriation claim is clearly not time-barred for the three years preceding the filing of this action (2001 to 2004).

1996).[4]

POINT II: A REASONABLE JURY COULD FIND THAT DEFENDANTS BREACHED THE NDA

Plaintiff will put before the jury a mountain of evidence of a range of violations of the NDA. Defendants breached the NDA by reverse-engineering ACE; by generating outputs that had not been agreed upon, copying, retrieving and analyzing those outputs, and using them for other than Agreed Purposes; by giving ACE to Defendants' trading desk, where Defendants used ACE to price MBS and ABS; by disclosing ACE to persons, such as Dr. Teytel, who did not need to receive ACE for Agreed Purposes; and by failing to return ACE and related materials to Plaintiff. Complaint at para. 103-111.

In attacking these fully substantiated claims, Defendants revert again to their mantra – addressed fully in preceding sections of this Brief – that Plaintiff cannot show that Defendants either stole the ACE numbers or copied the ACE distributions. Defendants charge that the distribution characteristics are not unique or novel, but, of course, this point is directly refuted by Dr. Fan. 2nd Fan Decl., paras. 23, 31-35, 77-82, 92-96. Further, Defendants distort Dr. Wang's testimony. Dr. Wang never testified that ACE itself is "publicly known and publicly available." Instead, he merely testified that, in developing or discovering the ACE sequences, he consulted among other materials certain information in the public domain. Ex. G, Wang Dep. at 246:14 – 247:24.

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[4] "Under the doctrine of fraudulent concealment, the statute of limitations will be tolled if the plaintiff pleads, with particularity, the following three elements: (1) wrongful concealment by the defendant, (2) which prevented the plaintiff's discovery of the nature of the claim within the limitations period and (3) due diligence in pursuing discovery of the claim." *Id.* "With respect to the first element, there are two general varieties of wrongful concealment. The defendant may have taken affirmative steps to prevent the discovery of the plaintiff's injury, or the nature of the wrong itself may nave been self-concealing." *Id.* The situation here satisfies both of these "varieties of wrongful concealment." As pled in the Complaint, Defendants affirmatively concealed their misappropriation of Plaintiff's trade secrets. *See, e.g.,* Complaint at para. 123, 128. Further, because use of this particular misappropriated trade secret is not readily observable outside of defendants' premises, such wrong is, in fact, "self-concealing."

Unfortunately for Defendants, they cannot find a basis for arguing that Dr. Teytel's access to and use of ACE constituted anything other than a brazen violation of the NDA. Defendants seem to suggest that, somehow, this violation really did not matter much, in view of Dr. Teytel's self-serving and utterly unbelievable testimony that he compared his 100 path sequence to ACE for purely "vanity" reasons. *See* Defs. Br. at 28.

As for whether Plaintiff has put forward evidence of damage, the jury could reasonably conclude that the damage was immense. As pointed out in earlier sections of this Brief, Defendants stole ACE, made hundreds of millions of dollars as a result, and paid Plaintiff nothing.

POINT III: THE JURY COULD REASONABLY FIND THAT PLAINTIFF SUFFERED DAMAGE

A. The Law Permits Recovery of Defendants' Profits

It is a matter of black letter law that Plaintiff may claim Defendants' profits as damages for misappropriation of trade secrets on the facts of this case. In *Softel, Inc. v. Dragon Medical & Scientific Communications, Ltd.*, the Second Circuit affirmed the district court's award of defendant's profits to a software developer whose computer code, like Dr. Wang's sequences, had been purloined by defendant and incorporated into its software. 118 F.3d 955 (2d Cir. 1997), *aff'g in pertinent part*, 891 F. Supp. 935 (S.D.N.Y. 1995). There, the "district court based its calculation of Softel's trade secret damages on [defendant] Dragon's profits." 118 F.3d at 969. There, as here, "[t]his [i]s the appropriate measure of damages." *Id.*

Softel is the most recent decision on the subject from the Second Circuit. It is binding and indistinguishable precedent. *Softel* was decided under New York law. *Id.* at 967-68. There, as here, defendant had rejected plaintiff's offer to license the trade secret before defendant stole

it. 891 F. Supp. at 938. There, as here, the plaintiff and the defendant were not competitors.[5] *Id.* Notwithstanding the applicability of *Softel* to this action, Defendants here do not even cite it.

Notwithstanding the ignored and binding precedent of *Softel*, Defendants argue that defendant's profits can measure damages for a misappropriated trade secret only when the plaintiff and defendant are competitors. But plaintiff and defendant were not competitors in *Softel*. Softel made paint-and-draw programs and Dragon made medical communications programs. They did not compete with each other. The status of Dragon and Softel as competitors *vel non* is of no consequence to the *ratio decidendi*.

Defendants may attempt to argue that they were indeed competitors because Dragon ultimately developed its own in-house paint-and-draw program called "Paintbox." 1992 WL 168190, at *11. But Dragon's Paintbox was "to be made available to graphic artists working for Dragon and was not intended for commercial distribution." *Id.* If Defendants argue that internal development of a similar product for internal use makes Dragon and Softel competitors, then AAI and CGM are "competitors" in the same sense.

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[5] In *Softel*, plaintiff Softel, Inc. ("Softel") was "a small New Hampshire corporation engaged in the business of creating and selling computer graphics products." 118 F.3d at 958. Defendant Dragon Medical & Scientific Communications ("Dragon Medical") was "a New Jersey corporation engaged in the business of designing communications programs relating to medical and scientific information." *Id.* Softel, and its principal, Paul Fiondella ("Fiondella"), had developed a "paint-and-draw" computer program, called Videogram, which allowed users to create images. *Id.* Dragon purchased a copy of Softel's Videogram to make images to be used in Dragon's medical communications programs, 891 F. Supp. 935, 938 (S.D.N.Y. 1995) (trial court damages decision); No. 87 Civ. 0167, 1992 WL 168190, at *4 (S.D.N.Y. June 30, 1992) (trial court liability decision).

Later, Dragon hired Fiondella to write various routines for its computer programs designed to educate users about Azactam (an antibiotic), melanoma, Kaposi's sarcoma, and Sorbinil (a drug), including routines used to retrieve images created with Videogram. 118 F.3d at 959; 1992 WL 168190, at *4, *6-*8. Fiondella never supplied or revealed the source code but rather an executable module that could be included in the larger program.[5] 118 F.3d at 958-59; 891 F. Supp. at 938; 1992 WL 168190, at *4, *6-*8. In the course of their dealings, Softel "offered Dragon a contract, *which Dragon refused*, pursuant to which Dragon would have paid plaintiff $3,500 per computer program to license code previously developed by plaintiff." 891 F. Supp. at 938 (emphasis added). Shortly afterwards, relations between Fiondella and Dragon broke down following an argument. 118 F.3d at 959; 1992 WL 168190, at *8. Thereafter, Dragon Medical "unerased" Softel's programming language version of the image retrieval routines from the hard drive of a computer on which Fiondella had been working. 118 F.3d at 959; 1992 WL 168190, at *9. Dragon Medical then expropriated the routines for its Harry Cell Leukemia, Low Back Pain and Heart Lab programs. 118 F.3d at 959; 891 F. Supp. at 939-40; 1992 WL 168190, at *10-*11.

The balance of Defendants argument draws entirely on *Design Innovation, Inc. v. Fischer-Price, Inc.*, 463 F. Supp. 2d 177 (D. Conn. 2006), along with an earlier "not-for-citation" opinion in that proceeding, *Victor G. Reiling Assocs. v. Fisher-Price, Inc.*, 2006 No. 03:CV 222 (JBA), 2006 WL 1102754 (D. Conn. April 25, 2006). That case is easily distinguished from the present situation because there, unlike here, the parties had actually agreed on a "royalty rate provided in the Option Agreement" between them. Here, unlike there, Plaintiff and Defendants never reached agreement on an appropriate royalty. The two *Design Innovation* opinions also simply misconstrue *Dragon* (rejecting *Softel* as a competitor case[6]) and misstate New York law, and were on appeal when the action was settled.

In their arguments, Defendants acknowledge and, in fact, concede that Plaintiff makes distinct and separate claims for misappropriation of trade secrets and for breach of contract. Defs. Br. at 30. Defendants are correct that disgorgement of profits is not a remedy for breach of contract. *Id.* Disgorgement, however, is a remedy for misappropriation of trade secrets, as shown above. Misappropriation of trade secrets is a tort. The damages for theft are more than paying the requested price for what was stolen. If it were law that the damages for theft were identical to those for breach of contract, it would encourage businesses to acquire know-how on a steal-first-and-pay-if-you're-caught basis. That would be deleterious to, if not wholly destructive to, commerce in trade secrets. It would prevent valuable know-how from reaching the market. It would limit, if not eliminate, innovations and economically desirable transactions.

The purpose of trade secret law is to encourage inventors to create innovations that are not protectable under patent or copyright law and to bring those innovations to use in the general

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[6] The only place where Softel and Dragon are described - inaccurately - as "competitors" is in the West-supplied syllabus and keynotes, which are *not* a part of the decision.

economy. The purpose of contract law is to encourage entities to enter into economically efficient contracts and to allow them to breach when the gains from the breach will more than compensate the aggrieved party.[7] Serving the purposes of trade secrets law requires that damages in the trade secrets cases often exceed the remedies available under contract law.

Indeed, in *Softel*, plaintiff's lost profits – "the amount plaintiff would have charged defendants under its proposed agreement" – amounted to only $7,000. 891 F. Supp. at 939. Nonetheless, the district court awarded $27,880.28 to Softel for the misappropriated trade secrets, determining that 50% of the profits from Dragon's programs that used the purloined routines could be attributed to the purloined image retrieval routines. *Id.* at 940, 946. The district court thus awarded almost four times plaintiff's lost profits or reasonable royalty, which would have been Softel's expectancy under its contracts with Dragon.

B. Plaintiff Puts Forward Ample Evidence of Lost Revenues

Defendants rely on inapposite cases and ignore the facts in asserting that Plaintiff has failed to proffer evidence of lost license revenues.

This is not a situation in which the expert, Dr. Russell Mangum, has made damage calculations based on projections of future losses. *Compare Suburban Graphics Supply Corp. v. Nagel*, 5 A.D. 3d 663, 666, 774 N.Y.S. 2d 160, 163 (2d Dep't 2004) (expert sought to estimate *future* lost profits as opposed to actual results, as in the present case). In addition, the present case has nothing to do with an expert's attempt to estimate future profits of an entertainment venture. *See Schonfeld v. Hilliard*, 218 F.3d 164, 174 (2d Cir. 2000) (where estimating *future* profits, expert must evaluate market conditions and weigh risks). Here, by contrast, Dr. Mangum

[7] In other words, under contract law, if someone can make more money by abandoning one contract for another, then that party should face no more consequence than giving the original contracting partner the benefit that he or she expected to reap from the contract. Overall economic wealth will be enhanced and nobody will be injured. That, however, is not the case for theft. Theft destroys value.

bases lost license revenues on the terms that the parties negotiated. He applies those negotiated terms to actual, historical revenues, as reflected by The Yield Book's summary financial statements. *See* Exhibit C, Magnum Report at n.36, Exhibit 3. Dr. Mangum's analysis had nothing to do with what might happen in the future with regard to some start-up business.

By the same token, Defendants' attack on Dr. Mangum completely misses the mark, because Defendants ignore the solid grounding of Dr. Mangum's lost license revenue calculations. Of course, it is up to the trier of fact, and not the Court on summary judgment, to resolve the factual dispute as to the whether licensing terms as negotiated as of June 2, 1998, reflected the understanding between Plaintiff and Defendants under which Defendants would license ACE. In a straightforward manner, Dr. Mangum states that he has been asked to assume that such licensing terms reflected the parties' agreement. This is not a matter of speculation. It is instead a reflection of the common practice of damages experts to opine on damages based on assumptions about whether liability is established.

Moreover, while assuming liability, Dr. Mangum provides ample evidence of the reasonableness of his damage conclusions by citing extensively to the evidence. For example, to the extent Dr. Mangum relies on interviews with Dr. Wang, this is exactly the same procedure followed by Defendants' damage expert, Dr. Sanders, who relied in his report on interviews with several of Defendants' personnel. *See* Ex. D, Sanders Report at 2.

In addition, Dr. Mangum reviews extensive evidence establishing the reasonableness assuming that the June 2, 1998 terms reflected the parties' understanding. Dr. Mangum addresses in detail the circumstances under which Dr. Wang and Dr. Mandel entered into licensing negotiations. At the point these negotiations began, Dr. Wang had indicated that he neither wished to allow Defendants to test ACE for a fourth time, nor wished to accept

Defendants' suggestion that he become Defendants' employee. *See* Ex. C, Mangum Report at 6. Dr. Mangum describes the course of the negotiations between Dr. Wang and Dr. Mandel, who negotiated on behalf of Defendants, noting specific changes made at particular times. He points out that the June 2, 1998 terms constituted the last set of negotiated terms between the parties prior to Defendants' misappropriation of ACE. *Id.* at 6, 8.

Moreover, Dr. Mangum demonstrates the basis on which it is reasonable to assume Defendants' $100,000 counteroffer could not possibly have reflected the understanding between the parties. For example, Dr. Mangum points out that, according to Dr. Mandel, the $100,000 counteroffer was based on amounts paid for other Yield Book features, but none of those other features was similar to ACE in identifying interest rate paths. *See* Ex. C, Mangum Report at 7; *see also* Ex. E, Mandel Dep. at 26-28 Dr. Mangum points out that, though Dr. Mandel claimed that the $100,000 counteroffer reflected an evaluation of the value of ACE in terms of hardware cost savings, Dr. Mandel admitted that he never made any estimate as to how much hardware cost would be saved. *See* Ex. C, Mangum Report at 7; *see also* Ex. E, Mandel Dep. at 18-19, 53. Dr. Mangum also notes that Dr. Mandel claimed that the $100,000 counteroffer reflected a view of ACE's value only to The Yield Book – not reflecting, for example, ACE's value to Defendants' trading floors. Ex. E, Mandel Dep. at 19:3-17, Plaintiff's Response to Defs.' 56.1 Statement, No. 67-68. This, however, ran counter to the fact that the $100,000 counteroffer put forward by Dr. Mandel requested the use of ACE across many of Defendants' different areas and business units extending beyond The Yield Book. *See* Ex. C, Mangum report at 7; *see also* Ex. E, Mandel Dep. at 2-22, 78, 80.

Defendants' remaining attacks on Dr. Mangum's opinion are the same thin soup. They fault Dr. Mangum for offering an opinion as to whether "the payments contemplated by the June

2 Proposal constitute a reasonable royalty." Defs. Br. at 34. But a damages expert such as Dr. Mangum acts properly when he refrains from opining on the merits.

Under these circumstances, the balanced and well-grounded opinion of Dr. Mangum is not affected by Defendants' attacks based on inapposite case law. *See 3947 Austin Boulevard Assocs., LLC v. M.K.D. Capital Corp.*, No. 04 Civ. 8596 (NB), 2007 WL 1575265, at *2 (S.D.N.Y. May 31, 2007) (concerning new business venture). Dr. Mangum appropriately assumes liability. Going further, he carefully reviews evidence that establishes the reasonableness of his damages assumptions. Dr. Mangum thus puts forward a reasonably based and cogent damage analysis that should go to the jury.

C. Plaintiff is Entitled to Recovery for Breach of Contract

As explained above, the jury could reasonably conclude that Defendants flagrantly violated the NDA. Defendants' breaches included reverse-engineering ACE, using ACE and ACE outputs for purposes other than Agreed Purposes, using ACE to price MBS and ABS for Defendants' trading activities, and providing ACE to persons – such as Dr. Teytel – who were not entitled to access to ACE. In this light, Defendants simply blow smoke when they assert that such breaches – including stealing ACE – worked no harm.

Dr. Mangum, who is not put forward as an expert as to legal matters, does not draw any distinction between tort versus contract. He refers to wrongful activity – "unauthorized possession and use of AAI's proprietary . . . ACE . . . technology." The law provides that such wrongful activity constituted both breach of contract and tort.

POINT IV: PLAINTIFF'S CONTRACT CLAIM DOES NOT IMPACT ITS UNJUST ENRICHMENT AND CONSTRUCTIVE TRUST CLAIMS

The parties entered into the NDA, which Defendants violated repeatedly and blatantly. The NDA, however, was never intended to govern all of the parties' relations. The NDA

specifically provided that "no license . . . is granted by this Agreement . . . ." Ex. F, NDA at para. 9. Instead, it was the intent of the parties – or at least of Plaintiff – that after successful testing of ACE, the parties would enter into a license agreement. Plaintiff proposed such a license agreement and, as the evidence before the jury will show, the parties reached an understanding with respect to the terms of this agreement on June 2, 1998. Defendants dispute that such an understanding was reached, which is a dispute that the jury will have to decide. Defendants, however, have never disputed that the NDA could not possibly have been intended to occupy the field of the parties' relations. Defendants themselves proposed a license agreement, which was in the form of Dr. Mandel's $100,000 counter-offer.

In this light, Defendants cannot be serious in asserting that the existence of the NDA forecloses Plaintiff's unjust enrichment and constructive trust claims. Defendants' own cases undercut their assertion. "The existence of a valid and enforceable written contract *governing a particular subject matter* ordinarily precludes recovery in quasi contract for events arising out of *the same subject matter*." *Clark-Fitzpatrick, Inc. v. Long Island R.R. Co.*, 70 N.Y.2d 382, 388, 521 N.Y.S.2d 653, 656 (1987) (emphasis added; cited at Defs. Br. at 36). Here, the NDA specifically excluded the subject of licensing. In other words, in the words of *Clark-Fitzpatrick*, the NDA did not govern "the particular subject matter" of licensing. Accordingly, Plaintiff may proceed with claims including unjust enrichment and constructive trust to recover the licensing revenues that Defendants have wrongfully denied them and to be made whole for the damage Defendants have wrongfully inflicted.

Defendants proceed to make the specious argument that because Plaintiff and Defendants were not competitors, such claims are not available. Yet competition is not required. Defendants cannot assert that competition is an element of either unjust enrichment or

constructive trust.

POINT V: PLAINTIFF'S CONTRACT CLAIM DOES NOT IMPACT ITS CLAIM FOR BREACH OF GOOD FAITH AND FAIR DEALING

As noted in the preceding section of this Brief, the NDA specifically excluded licensing. Accordingly, just as Plaintiff's unjust enrichment and constructive trust claims proceed, so, too, does Plaintiff's claim for breach of duty of good faith and fair dealing.

POINT VI: DEFENDANTS ARE ENTITLED TO NO RECOVERY ON THEIR COUNTERCLAIM AND NO ATTORNEY'S FEES AND COSTS

It is Plaintiff, not Defendants, who is entitled to attorney's fees and costs under the NDA, as argued in Plaintiff's Motion for Partial Summary Judgment. Indeed, even if, *arguendo*, Defendants were entitled to summary judgment – which they most emphatically are not – they would have no right to recover under the attorney's fees and costs provision of the NDA. This is because it is Plaintiff, not Defendants, who claims violation of the NDA.

CONCLUSION

For the foregoing reasons, the Court should deny Defendants' motion for summary judgment.

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Respectfully submitted,

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